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Los Alamos
National Laboratory

Environment, Safety, and Health Division

Air Quality Group
(ESH-17)

Quality Assurance Project Plan

for

Beryllium Stack Monitoring at TA-3-141

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General Information

Table of Contents

General Information, continued

Appendixes

This plan has the following appendixes:

Number	Appendix Title	No. of pages
A	Beryllium Stack Monitoring Organization Chart	1
B	References	1

History of revision

This table lists the revision history of this plan.

Revision	Date	Description of Changes
0	3/9/2000	New document developed to provide DQOs and organizational structure for Beryllium stack monitoring.

Section 1

Quality Program

Organization

Purpose

This plan has been designed to ensure quality assurance aspects of continuous beryllium stack monitoring are sufficiently addressed to meet the requirements for monitoring as identified in Permit #634-M-2 ("Permit" or "beryllium permit").

Policy

LANL will comply with the continuous monitoring requirements of the beryllium permit for the TA-3-141 Beryllium Facility. Compliance will be demonstrated through the successful implementation of this project plan and applicable procedures.

Regulatory drivers

The drivers for the development and implementation of this monitoring project are:

- Permit 634-M-2

Project organization

See the ESH-17 QMP for the group organizational structure. The organizational structure of the beryllium monitoring effort is provided as Appendix A.

ESH-17 is organized by project teams under the line-management direction and responsibility of the group leader. The Operating Permit Project Leader and the Rad-NESHAP Project leader will share ESH-17 responsibilities for this stack monitoring effort. The Operating Permit Project Leader will be responsible for ensuring adherence to the Permit requirements. The Rad-NESHAP Project Leader will ensure that monitoring is performed in accordance with the Permit, as specified in this plan.

Other Laboratory organizations and sub-contractors will be utilized, as necessary, to facilitate the performance of monitoring activities in accordance with this plan.

Organization, continued

Structure of the quality program

This Quality Assurance Plan, including implementing procedures, is a second-tier document to the ESH-17 Quality Management Plan (ESH-17-QMP). The following documents provide requirements to ensure the project is operated in accordance with the above regulatory drivers:

- ESH-17 Quality Management Plan
- implementing procedures

Implementation

The following table lists specific responsibilities.

Who	What
Rad-NESHAP Project Leader	Share ESH-17 responsibilities for this stack monitoring effort with the Operating Permit Project Leader. Ensure that continuous monitoring is performed in accordance with the Permit, as specified in this plan.
Operating Permit Project Leader	Share ESH-17 responsibilities for this stack monitoring effort with the Rad-NESHAP Project Leader. Ensure adherence to the Permit requirements.

Section 2

Personnel Development

Personnel Training and Qualification

Personnel requirements

Qualified beryllium stack monitoring team members will be hired and trained as prescribed in the ESH-17 QMP.

Personnel are required with knowledge of the following:

- Particulate stack monitoring.
- Beryllium safety
- Exhaust stack flow measurements
- Sample handling and chain of custody

Training

All personnel performing project-related work are required to obtain appropriate training prior to performing work governed by a procedure. Training for ESH-17 personnel, and for persons performing ESH-17 procedures, will be performed and documented according to ESH-17-024, "Personnel Training" and ESH-17-032, "Orienting New Employees." Training of personnel in other groups will be performed and documented according to each group's training procedure.

Contractor analytical laboratories are required to have training and training documentation systems in place that comply with the training requirements of DOE Order 414.1, Criterion 2.

JCNNM personnel who perform work according to ESH-17 procedures will be incorporated into the ESH-17 quality assurance program and their training will be documented accordingly.

Other Laboratory organizations, responsible for performing ESH-17 procedures, will be trained in accordance with ESH-17-024.

Section 3

Quality Improvement

Improving Quality

Performance reports

Personnel assigned to perform beryllium monitoring activities provide periodic updates, either verbal or written, to the Operating Permit or Rad-NESHAP Project Leaders. The Project Leaders provide periodic updates, either verbal or written, to the ESH-17 Group Leader and the Beryllium facility operations manager.

Corrective actions within ESH-17

Corrective actions for all ESH-17 projects are initiated, tracked, corrected, and documented according to the ESH-17 Quality Management Plan and group procedure ESH-17-026, "Deficiency Tracking and Reporting."

Quality improvement

Stack monitoring activities will adhere to the policy for continuous improvement as given in the ESH-17 QMP.

Section 4

Documents and Records

Documents and Records

Policy

The beryllium monitoring efforts will generate and retain sufficient records to ensure compliance with the monitoring requirements of the Permit. The type and extent of records to be maintained are determined through this plan and its implementing procedures.

Additionally, data that are maintained in electronic form (e.g., databases and spreadsheets) will be maintained in a manner that ensures defensibility and accuracy.

Document control

This plan is controlled through the ESH-17 document control procedure (ESH-17-030, "Document Distribution"). The following personnel will receive controlled copies of this plan:

- ESH-17 Group Leader
- MST Beryllium facility operations manager
- Rad-NESHAP Project Leader
- Operating Permit Project Leader
- LANL personnel assigned to work with Be stack monitoring
- ESH-17 Quality Assurance Officer
- Assistant Area Manager, Office of Environment and Projects, DOE Los Alamos Area Office

Procedures

Procedures will be developed as necessary and in accordance with the policy in the ESH-17 QMP and procedure ESH-17-022.

Disposition and retention

Active files are maintained and kept by assigned beryllium sampling personnel. After files have been finalized and all documentation is complete, these files are submitted as records to the records coordinator. Records are archived in compliance with Laboratory and DOE requirements for records retention, storage, and management and procedure ESH-17-025, "Records Management."

Electronic media

Policy

The beryllium monitoring efforts will utilize electronic means as necessary to maintain data and perform calculations on these data. Electronic means will not replace paper copy. All records that must be maintained to meet the requirements of the Permit will be kept in hard copy as the official record.

The preferred electronic means for data storage is in an Access database. However, until this implementation is complete, the use of spreadsheets will be acceptable provided that the function of such spreadsheets can be demonstrated.

Databases

Backups -- All databases used to hold data and generate reports to be used in demonstrating compliance will be maintained on the "Databases" drive of the Air Quality server. These databases will be backed up daily to minimize potential losses of data.

Verification of data -- All compliance-related data uploaded into a database will be verified to be accurate against the original paper copy. Data that are uploaded through electronic means will undergo 10% verification. Data that are uploaded through manual means will undergo 100% verification. The 100% review must be performed by someone other than the data entry person. This review will be documented and forwarded to the appropriate record series.

Verification of calculations -- All compliance-related calculations performed in a database through queries will be reviewed for accuracy by a person other than the person who generated the query. This review will be documented and forwarded to the appropriate record series.

Software control -- The integrity of all databases will be ensured by maintaining them on the Air Quality server. This will enable the ESH-17 database administrator to control access to these databases, allowing only trained authorized persons access to the databases.

Electronic media, continued

Spreadsheets

Backups -- All spreadsheets used to hold data and generate reports to be used in demonstrating compliance will be maintained in a secure location. The preferred location is on the Air Quality server. Spreadsheets will be backed up at least weekly.

Verification of data -- All compliance-related data uploaded into a spreadsheet will be verified to be accurate against the original paper copy. Data that are uploaded through electronic means will undergo a 10% verification. Data that are uploaded through manual means will undergo a 100% verification. The 100% review must be performed by someone other than the data entry person. This review will be documented and forwarded to the appropriate record series.

Verification of calculations -- All compliance-related calculations performed in a spreadsheet will be reviewed for accuracy by a person other than the person who generated the spreadsheet. This review will be documented and forwarded to the appropriate record series. Modifications to the function of these spreadsheets will also be verified in this manner.

Software control -- The integrity of spreadsheets will be ensured by limiting access to these spreadsheets to only trained, authorized personnel. Additionally, at least once per year, the function of the spreadsheets will be verified by hand calculations. Documentation of this review will be forwarded to the appropriate record series.

Section 5

Work Processes

Planning and Performing Work

Purpose of Beryllium stack monitoring work processes

The Beryllium stack monitoring effort is used to demonstrate compliance with the emissions limits set forth in the Permit. The work processes described in this Section 5 are the methods that will be used to meet the quality assurance requirements for stack monitoring. These QA requirements are based, in general, on the requirements of 40 CFR 61, Appendix B, Method 114, Section 4 *Quality Assurance Methods*.

The requirement for periodic internal and external audits is addressed in sections 9 and 10.

Requirement

LANL is required to sample the beryllium-emitting stack at TA-3-141. This monitoring will be used to demonstrate compliance with the emissions limits set forth in the Permit. The emissions limits are 3.5 g/yr and 0.35 g/day.

Implementation

The following table lists responsibilities.

Who	What
Rad-NESHAP Project Leader	Oversee daily operation of continuous monitoring activities. Define scope of continuous monitoring activities through preparation of this plan.
Operating Permit Project Leader	Review and approve scope of continuous monitoring activities provided in this plan.

Data Quality Objectives (DQOs)

Purpose

Quality assurance for the operation and maintenance of a beryllium effluent continuous measurement program requires that objectives for the measurement data be determined and implemented. The three segments of the measurement DQOs to be assessed are: precision, accuracy, and completeness.

Precision

Per 40 CFR 61, Appendix B, Method 114, Section 4.4, "Precision is a measure of the agreement among individual measurements of the same parameters under similar conditions." Precision requirements for each of the following measurements have been identified:

Stack flow measurement – At least once per year, a duplicate flow measurement will be made at a monitored beryllium stack. This flow measurement will occur within one week of the original flow measurement. The acceptable relative percent difference for these measurements is 10%.

Sample flow measurement – At least once per year, a duplicate sample flow measurement will be made at a monitored beryllium stack. This flow measurement will occur within one week of the original flow measurement. The acceptable relative percent difference for these measurements is 10%.

Sample analysis – Periodically throughout the year, the second half of a sample filter will be submitted to the analytical laboratory for analysis. The tolerable limits for difference for these duplicate measurements are ±10% at the 0.01 g/half-filter (or approximately two to five times the requested MDL). See the chapter *Sample Analysis*, page 18, for additional information on sample detection limits. Because most data are expected to be far below this value, they will be evaluated qualitatively, using best professional judgement, to ensure acceptable agreement.

Data Quality Objectives (DQOs), continued

Accuracy

Per Method 114, Section 4.4, "Accuracy is the degree of agreement of a measurement with a true or known value." Accuracy requirements for each of the following measurements have been identified:

Overall system performance – The sample system has been installed in accordance with the EPA's Alternative Reference Methodology (ARM, for use with 40 CFR 61, Subpart H). This ensures that the sampling location is well mixed and that particle losses are minimized. Further, the ARM is technically analogous to the revised ANSI N13.1-1999 stack sampling guidance. Although this standard applies to sampling for radioactive materials, the underlying principles of particle sampling are constant for both nuclear and non-nuclear applications. Satisfactory system installation in accordance with the ARM is ensured by following the requirements of ESH-17-121.

Particle loss correction factor – The particle loss correction factor has been chosen to represent losses of 10-micron particles up to the point of sample collection. This choice results in a high bias in results due to the presence of HEPA filtration in the stacks. However, this high bias has been determined to be acceptable and further ensures that emissions are not underestimated. If this level of conservatism is determined to be inappropriate in the future, this correction factor may be revised to more closely approximate the actual situation.

Effluent flow rate – For calculating emissions (see the chapter *Emissions Calculations*, page 21), the maximum flow rate measured in the past three years will be used. Although this method results in a high bias, this bias has been determined acceptable and will be used to provide further assurance that emissions are not underestimated.

Data Quality Objectives (DQOs), continued

Completeness

Per Method 114, Section 4.4, "Completeness is a measure of the amount of valid data obtained compared to the amount expected under normal conditions." Completeness requirements for each of the following measurements have been identified:

Sample collection – The requirement for completeness of sample collection will be 90% for **each** beryllium-emitting stack. This includes all samples lost due to equipment malfunction, personnel error, and sample damage up to the point of delivery to the analytical laboratory. This measure will be evaluated at least annually.

Sample analysis – The requirement for completeness of sample analysis will be 90% for **each** beryllium-emitting stack. This includes all samples and data lost after delivery of samples to the analytical laboratory. This measure will be evaluated at least annually.

Implementation

The following table lists responsibilities.

Who	What
Rad-NESHAP Project Leader	Develop and maintain the requirements and objectives for the measurement of airborne beryllium particulate effluents. Assign personnel to evaluate the project performance with these requirements and objectives. Take action, as necessary, to ensure that the project meets the requirements and objectives.
Beryllium stack monitoring personnel	Evaluate project performance with the requirements and objectives. Inform the project leaders of any problems or potential problems that may impact the project's ability to meet the requirements and objectives.

Sample Collection

Purpose

The TA-3-141 beryllium facility effluent will be sampled to determine the amount of beryllium released to the ambient air.

Identification of sampling sites and probe types

Sampling or monitoring sites are selected in accordance with ESH-17-121, "Sampling/Monitoring Radioactive Particulates, Tritium, and Gases from Exhaust Stacks, Vents, and Ducts." Performance of this procedure generates worksheets that document system design, sampling probe type, and sampling probe location parameters. Completion of this process demonstrates compliance with 40 CFR 61, Appendix A, Method 1 and the guidance in the EPA Alternative Reference Method.

Description of sampling probes and represent-ativeness

Sampling probes -- The beryllium stack will be sampled using a shrouded probe. The shrouded probe is a single-point sampling device that has been designed to increase particle collection and transmission.

Representativeness of samples -- Samples will be obtained to ensure representative or at least conservatively high measurements of particulate emissions. To ensure that samples are representative or at least conservative, losses will be estimated for 10-micron particles. This will introduce a high bias; however, this is considered acceptable (see "Accuracy" on page 13 in the chapter *Data Quality Objectives (DQOs)*).

Further, installation of the shrouded probe requires that particles be well mixed and that a representative sample be taken. Installation of this type of probe in accordance with the ARM ensures that a representative sample will be obtained.

Sample Collection, continued

Sample collection system

General description -- As described previously, LANL will use the shrouded probe to collect a sample from the stack. Long horizontal sample lines will be minimized to allow for the maximum particle transmission. Where necessary to increase safe access, longer vertical runs will be considered acceptable. A Dynawebb filter (or equivalent) will be used to collect the particles.

Frequency of collection and sample change-out -- The beryllium particle collection systems sample continuously during normal operation. The Dynawebb filters will be removed usually each Thursday and replaced with fresh media according to ESH-17-135. The sample change-out schedule may be modified to accommodate holidays and inclement weather. Facility personnel may also request an early sample removal in the event of an unplanned release or other operational or programmatic need.

Sample flow rate measurements

Sample flow rate -- Sample flow will be measured in the field using a rotometer that has been set using a calibrated magnehelic gauge.

Sample flow calibration -- Sample flow will be verified approximately quarterly using a calibrated magnehelic gauge.

Sample Collection, continued

Effluent flow rate measurements

Effluent flow rate measurements -- Effluent flow rates will be measured using a standard or s-type pitot tube in accordance with ESH-17-127, "Determination of Stack Gas Velocity and Flow Rate in Exhaust Stacks, Ducts, and Vents." These flow measurements will be performed at least quarterly and meet the requirements for periodic flow measurements.

Calibration of effluent flow measuring devices -- Instruments used to measure stack flow, which require calibration, will be calibrated as specified in ESH-17-127.

Implementation

The following table lists responsibilities.

Who	What
Rad-NESHAP Project Leader	Approve sample site locations and probe types. Approve calibration requirements for systems used in sample collection.
Beryllium stack monitoring personnel	Design or oversee design of sampling systems. Install or oversee installation of sampling systems. Collect and transport stack samples according to procedure. Review calibration and measurement procedures to ensure conformance with requirements.
JCNNM	Perform effluent flow rate measurements according to schedule and procedure. Perform sample flow calibrations according to schedule and procedure.

Sample Analysis

Purpose

The beryllium stack monitor samples will be quantitatively analyzed for the presence of beryllium.

Sample preparation

ESH-17 will prepare samples for shipping to an offsite laboratory. The entire sample will be shipped to the analytical laboratory. Upon receipt, laboratory personnel will cut the filter in half. One half will be analyzed immediately, and the second half will be retained for future analyses or quality checks.

Analytical methods

Each sample submitted to the analytical laboratory will be analyzed for the presence of beryllium. The sample will be ashed and the residue will be dissolved in mixed concentrated acid and diluted to volume with high purity distilled water.

The beryllium content of the resulting solution will be determined quantitatively using Inductively Coupled Plasma Atomic Emission Spectrometry.

Frequency of analysis

Generally, samples will be removed on Thursdays and submitted to the analytical laboratory on Friday of that week. The results of the analyses will be available within 45 days of sample submittal.

If necessary, due to potential unplanned releases or programmatic needs, samples can be analyzed and preliminary results received within 7 days.

Calibration of analytical equipment

Analytical equipment will be maintained and calibrated by the analytical laboratory. The frequency of these activities and the supporting documentation will be maintained and will be made available for audit and inspection.

Detection limits

Detection limits for beryllium stack filters are based on the limits imposed on the beryllium stack emissions. These limits are 3.5 g/yr and 0.35 g/day. Since samples will be collected weekly, the most restrictive weekly value is (3.5 g/yr)/(52 wk/yr) = 0.067 g/wk. The minimum detectable level has been set to 0.001 – 0.005 ug/half-filter. The technical justification for this can be found in memo ESH-17:99-006.

Sample Analysis, continued

Implementation

The following table lists responsibilities.

Who	What
Rad-NESHAP Project Leader	Approve analytical laboratories that are contracted to analyze beryllium samples. Approve Statements of Work (SOWs) for analytical laboratories that are contracted to analyze beryllium samples.
Analytical Chemistry Coordinator (ACC)	Prepare Statements of Work (SOWs) for analytical chemistry laboratories that analyze beryllium stack samples. Review analytical data to ensure that they meet the requirements of this QAPP and the applicable SOW. Inform the project leader of any discrepancies in data that may impact project requirements. Perform annual audits of analytical laboratories.
Beryllium stack monitoring personnel	Provide support to the ACC in identifying and resolving discrepancies with analytical data.
Analytical laboratories	Analyze beryllium stack samples according to the requirements of the SOW.

Sample Tracking

Purpose

The beryllium stack samples are used to demonstrate compliance with requirements in the Permit. Any persons involved in the preparation, retrieval, and analysis must maintain positive control of samples at all times until sample disposal.

Chain of custody during sample prep and retrieval

Positive control of samples maintained during sample preparation and retrieval according to the chain of custody requirements of ESH-17-135. All persons (other than analytical personnel) performing sample preparation and collection will be trained to ESH-17-135 and must adhere to the chain of custody requirements therein.

Chain of custody during analysis

Any analytical laboratory that is contracted to perform sample analysis on beryllium stack filter samples will maintain sufficient procedures to ensure positive control of samples.

Chain of custody during storage/ disposal

Retained half-filters will be maintained under chain of custody by the analytical laboratory until reanalysis, return to ESH-17, or ultimate disposal.

Implementation

The following table lists responsibilities.

Who	What
Rad-NESHAP Project Leader	Approve procedures for sample handling and control during sample preparation and retrieval.
Analytical Chemistry coordinator	Ensure chain-of-custody requirements are addressed in SOWs. Ensure analytical laboratories adhere to requirements for chain of custody.
Beryllium stack monitoring personnel	Adhere to requirements for chain of custody as described in ESH-17-135.
Analytical laboratories	Maintain positive control of samples as required by SOWs and as described in internal procedures.

Emissions Calculations

Purpose

ESH-17 will calculate emissions of beryllium from the sampled beryllium stack to demonstrate compliance with the emissions limits of Permit #634-M-2.

Requirement

Emissions from the sampled beryllium stack will not exceed 3.5 g/yr and 0.35 g/day.

First principles

Emissions are calculated using the basic premise that the amount of particles collected is related to the amount of particles and vapors emitted from the point source according to the following equation:

$$Be_{emitted} = (Be_{collected} - Be_{blank}) * F_{effluent} / F_{sample}$$

Where,

- $Be_{emitted}$ is the amount of beryllium particles emitted from the point source in grams
- $Be_{collected}$ is the amount of beryllium particles collected on the media in grams
- Be_{blank} is the amount of beryllium present naturally in the sample medium.
- $F_{effluent}$ is the effluent flow rate (three year historical maximum)
- F_{sample} is the sample flow rate

Blank correction

Due to beryllium naturally present in the sample medium, a correction for this beryllium blank will be made. Because of statistical variability at very low levels, it is possible that the amount of beryllium measured in the blank could be greater than the amount of beryllium measured in the sample. As a result, the net result could be negative. Should this occur, the net value will be truncated to zero. Although statistically this would result in a slightly high bias in calculated emissions, the amount of bias is small and is considered acceptable.

Other correction factors

Line losses – Particle line losses will be corrected using approximations for 10 micron particles (see "Accuracy" on page 13). For a shrouded probe, this corresponds to a correction factor of approximately 1.1.

Collection efficiency – For the Dynawebb filters, no correction factor is necessary because the filters are approximately 100% efficient.

Emissions Calculations, continued

Split sample correction – A correction factor of 2 will be used to account for the split sample.

Downtime – To account for time where a sample may not be collected, a correction factor will generally be calculated for each sample based on the total amount of time the sampler ran and the total amount of time that the sampler potentially could have run.

Calculating emissions for comparison with annual limit

Emissions calculated for comparison with the annual limit of 3.5 g/yr will be the sum of the weekly emissions results. The time period of a year will be approximately equal to a calendar year; however, there may be a one to two week discrepancy due to holidays, inclement weather, etc. In any event, the annual emissions will be based on approximately 52 weeks. Correction factors, described above, will be incorporated as appropriate.

Calculating emissions for comparison with daily limit

Emissions calculated for comparison with the daily limit of 0.35 g/day will be calculated using the results of weekly sampling. The total sampling time will be determined by recording the time the sample was installed and removed.

For example, if a sample runs for 168 hours, the daily emissions rate will be calculated by dividing the total beryllium emitted (in grams) during the period by (168 hrs/(24 hrs/day)).

Implementation

The following table lists responsibilities.

Who	What
Operating permit project leader	Approve procedures for calculating beryllium emissions.
Beryllium stack monitoring personnel	Calculate beryllium emissions, through electronic or other means, in accordance with the requirements of this QAPP.

Responding to Increased Emissions

Purpose

To ensure adherence to emissions limits, the beryllium stack monitors will be used to identify emissions of beryllium that could potentially result in permit exceedances.

Identifying increased releases

The maximum allowable continuous release to remain within permit limits is 0.067 g/wk. To ensure that the annual total does not exceed 3.5 g/yr, any value in excess of 0.05 g/wk will be reported immediately to the Beryllium facility personnel and the Operating Permit Project Leader.

Responding to increased releases

If emissions from the facility have the potential to impact the Laboratory's compliance with the emissions limits, the responsible facility representatives will be informed. Notifications will be made to a sufficiently high level of management to ensure that the conditions that result in the release are corrected.

Implementation

The following table lists responsibilities.

Who	What
Rad-NESHAP Project leader	Assign team members to carry out evaluation procedures. Inform the Operating Permit Project Leader and others of significant increased emissions.
Operating Permit Project Leader	Communicate with facility personnel to ensure that appropriate actions are taken in the event of an increased release of beryllium.
Beryllium stack monitoring personnel	Carry out evaluations of and document increased emissions. Inform the project leader if emissions exceed triggers specified in increased-emission procedures.

Process Verification and Peer Review

Purpose

Monitored point source activities related to measuring beryllium emissions will be reviewed and verified by qualified persons to ensure that project requirements are met.

Verification and peer review methods

Through a process of peer review and verification, LANL helps ensure that these activities meet project requirements. These methods are described below for each process.

Process	Method(s)
Data Quality Objectives	Representatives from ESH-17 will approve the initial DQOs and will approve any modifications to these DQOs. At least once per year, ESH-17 will determine adherence to the DQOs. Failure to meet any of the DQOs will be addressed as deficiencies according to ESH-17-026.
Sample collection	Prior to installation of new systems, review all sample system locations used to monitor the beryllium stack. Periodically review the calibration schedule of the collection systems to ensure the frequency continues to be acceptable.
Sample analysis	As data are received, verify data are complete, reasonable, and meet the requirements of this QAPP and any applicable SOWs.
Sample tracking	At least once during the year, review chain of custody documentation for sample collection personnel and analytical laboratories. This may be accomplished through routine audits and assessments.
Emissions calculations	Verify selected assumptions, data, and emissions calculations. As data are entered or electronically uploaded into a database or other electronic media, review data for accuracy. Review at least 10% of electronically uploaded data and 100% of manually entered data.

Process Verification and Peer Review, continued

Process	Method(s)
Responding to increased emissions	At least once per year, review the "cutoff" limit for emissions to ensure that they provide sufficient protection against emissions limit exceedances.

Section 6

Design

Design

Identify design requirements

The project leaders will identify applicable design requirements for sampling systems used to monitor beryllium stacks to ensure that the design process meets the requirements of the Laboratory Quality Management Plan. Design activities will be conducted and reviewed in accordance with established and approved procedures, incorporating and implementing sound engineering/ scientific principles and appropriate standards such as ANSI N13.1(1969).

Section 7

Procurement

Procurement

Procurement of items and services

Procurement of items and services used in beryllium monitoring will follow the Laboratory procurement process and the requirements in the ESH-17-QMP. Most items and services required for the project are commercial grade in nature and no special procurement requirements or needs are necessary. For items and all services for which special requirements are necessary, the project leader and project members will identify such items or services. Such items and services include:

- stack probes
- analytical services

Section 8

Inspection and Acceptance Testing

Inspection and Acceptance Testing

Policy

Any materials or services will be inspected and/or tested prior to acceptance for use in beryllium monitoring. Most supplies used during performance of beryllium stack monitoring are commercial grade in nature and require no special acceptance practices or procedures.

Section 9

Management Assessment

Project Management Assessments

Internal assessments

The Air Quality Group conducts internal management assessments of all projects and programs in the group in accordance with requirements in the ESH-17 Quality Management Plan. The Group Leader will perform an assessment of the effectiveness of the beryllium stack monitoring effort periodically. Assessments of the project are documented and filed as records.

Responding to assessments

When violations of requirements are found during a management assessment, a deficiency report is initiated to document the violation. Corrective actions are tracked and documented in accordance with ESH-17-026, "Deficiency Reporting and Correcting."

Section 10

Independent Assessment

Project Assessments

Policy

The beryllium stack monitoring efforts will undergo audits and assessments by persons not responsible for the performance of these audits. In general, these audits will be conducted as part of audits on the Rad-NESHAP Project (see ESH-17-RN). This is possible because many of the procedures and personnel are identical.

Internal audits

Annual audits/assessments will be conducted by the ESH-14 Quality Management Group. The ESH-17 Quality Assurance Officer, with input from the Operating Permit Project leader and the Rad-NESHAP Project Leader, will identify one or more areas of the project to be audited each year.

Implementation

The following table lists specific responsibilities.

Who	What
Operating Permit or Rad-NESHAP Project Leader	Approves audit schedules. Provides input to ESH-17 Quality Assurance Officer as to the content of internal audits. Review audit reports for factual accuracy. Address all findings and implement corrective actions as appropriate.
Quality Assurance Officer	Identify areas to be addressed during internal audits. Contract with the Quality Management Group to perform annual internal audits. Review audit procedures to ensure they meet the requirements in this section.
Team members	Cooperate with auditors by providing information, data, etc. Implement corrective actions as directed by Rad-NESHAP Project Leader.

Assessing Suppliers

Policy

The Project Leaders (in coordination with the group QA officer) will ensure that periodic assessments are conducted to determine whether required information from the following organizations meets quality specifications:

- analytical laboratories supplying data
- organizations supplying services (such as JCNNM)

If problems are found with a supplier's product, ESH-17 will work with that supplier until the problem is corrected or will obtain alternate suppliers.

Analytical laboratories

ESH-17 will perform annual audits of analytical laboratories that provide analytical data used in compliance calculations. These audits will be conducted by the ESH-17 Analytical Chemistry Coordinator in conjunction with the ESH-17 QA officer and/or any other persons the coordinator deems appropriate.

JCNNM

JCNNM is responsible for performing flow measurements, sample flow calibrations, and pump maintenance. As determined appropriate by the beryllium monitoring Project leaders and the Quality Assurance Officer, these areas of JCNNM's work will be audited as part of the internal audits conducted by the Quality Management Group.

Implementation

The following table lists specific responsibilities.

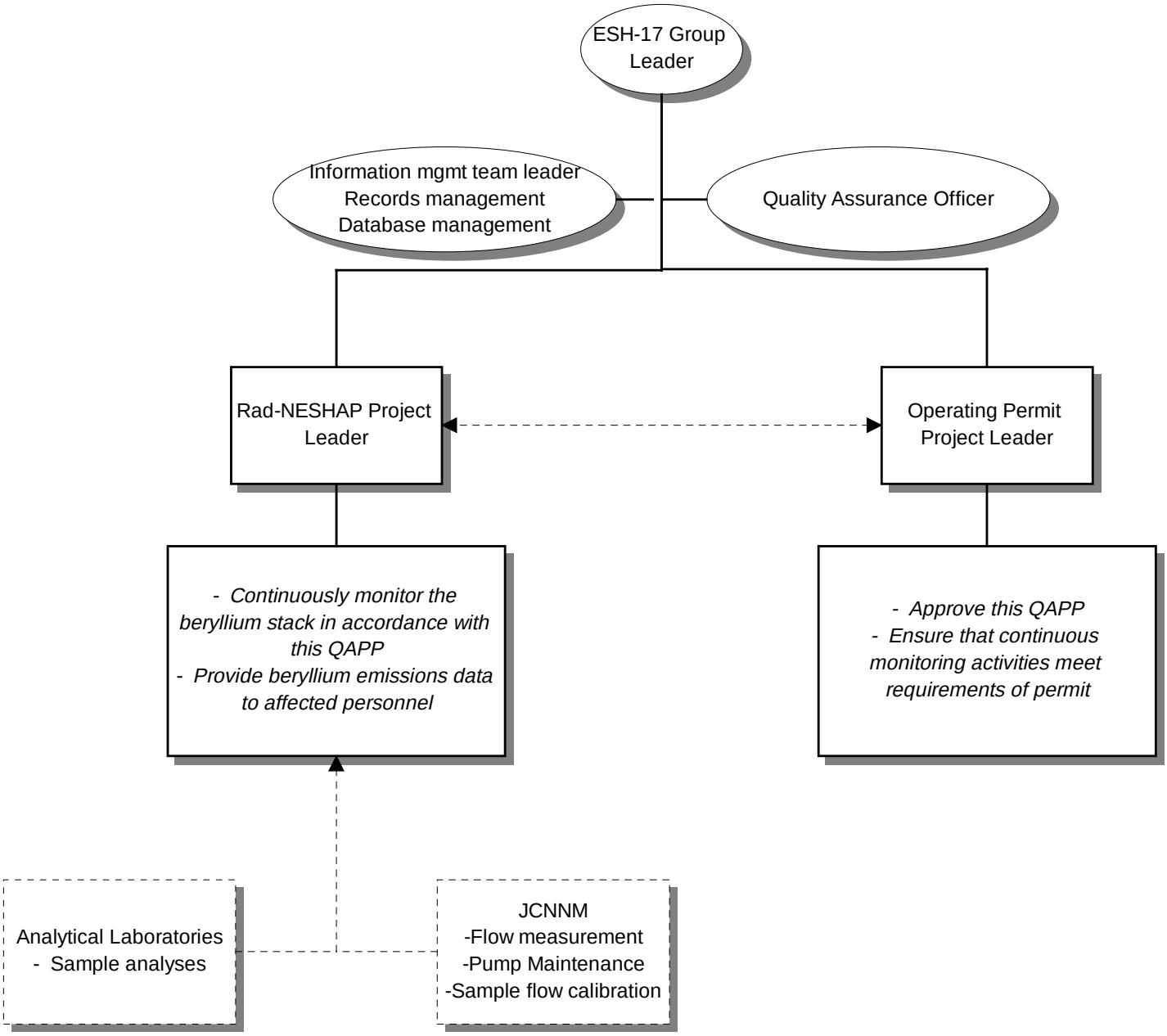
Who	What
Rad-NESHAP Project leader	Approves audit/assessment schedules. Review audit reports for factual accuracy. Address all findings and implement corrective actions as appropriate.
Quality Assurance Officer	Identify areas to be addressed during audits of suppliers. Contract with the Quality Management Group to perform annual internal audits. Review audit procedures to ensure they meet the requirements in this section.

Assessing Suppliers, continued

Who	What
Analytical Chemistry Coordinator	Develop procedures for auditing analytical laboratories. Assemble audit team and perform analytical lab audits. Notify Rad-NESHAP Project Leader and Quality Assurance Officer of findings by issuing final audit report.

Appendix A

Beryllium Stack Monitoring Organization Chart



Appendix B

References

Requirements, guidance, and other non-ESH-17 documents:

Title 40 Code of Federal Regulations Part 61, Subpart A, "General Provisions," December 15, 1989

Title 40 Code of Federal Regulations Part 61, Subpart H, "National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities," December 15, 1989

ANSI N13.1-1969, "Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities"

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